

REMARKS

Claims 1-19 are pending. Claims 6-19 have been added. No new matter has been added.

The Office Action objects to the Abstract for failing to commence on a separate sheet. A new abstract is provided and attached hereto on a separate sheet.

The Office Action rejects claims 1-5 under 35 U.S.C. 103 as being obvious over Herrmann (US Patent No. 4,296,986) in view of GB'069 (GB Patent No. 1242069). Specifically, the Office Action asserts that in Herrmann there is an air space in the "initial inserted state of the rubber cone into the socket." The Office Action concedes that Herrmann does not disclose a potential well, but asserts that it would have been obvious to modify the Herrmann device with the spring ring 84 disclosed in GB'069 for the purpose of spark prevention.

Claims 1-5 include the feature of an expansion space (25) between an end face of the rubber cone (13) and a bottom of the coupling socket (20) when the plug is in a fastened state.

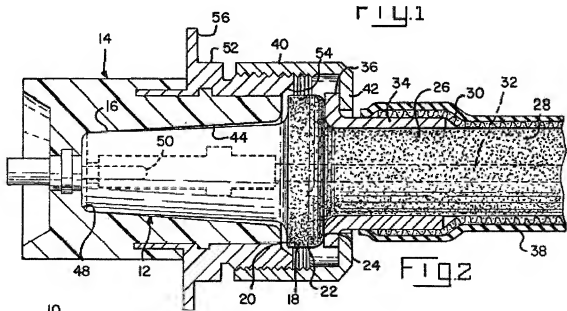
Herrmann describes a hermetically sealed connector which abuts the end face against the socket distal wall:

Referring now to FIG. 2, the mating sequence proceeds as follows. **As the plug forward portion 16 is inserted into the receptacle bore 44 and bottoms against the rearward wall 48, the pin 50 engages the mating plug socket 33.** It will be appreciated that the forward profiled dimension and configuration of the plug member 12 is identical to the profiled dimension and configuration of the rearward wall 48. Also, it should further be appreciated that the angle of taper of the bore 44 is greater than

the angle of taper of the plug portion 16. The above-described insertion of the plug is effectuated by engagement between the threaded collar 40 and the threaded bushing 52. As illustrated, the forward surface 20 of the plug flange 18 is displaced forwardly from the forward receptacle face 46 at this initial stage in mating procedure.

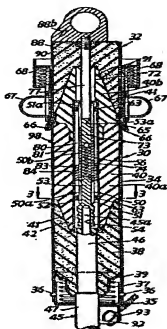
As shown by FIG. 3, subsequent tightening of the collar 40 exerts force on the rearward facing surface 24 of the plug flange 18 through the ferrule flange 36. **This pressure forces the plug nose portion 16 against the receptacle surface 48 under stress**, and causes the nose portion to outwardly flex along its taper progressively toward the receptacle forward face 46, and thereby evacuate air from the receptacle bore 44 in that direction. (Herrmann col. 3, lines 13-37)(emphasis added).

This sealing abutment of the nose 16 of the Herrmann plug with the distal wall 48 of the socket when in the fastened position is shown in FIG. 2 of Herrmann:



Similarly, GB'069 does not describe the feature of claims 1-5 of an expansion space (25) between an end face of the rubber cone (13) and a bottom of the coupling socket (20) when the plug is in a fastened state. GB'069 is relied upon by the Office Action for its description of the ring 84 serving to connect electrically the conductive layer to the connect 50 as shown in FIG. 2:

FIG. 2.



As such, claims 1-5 are not obvious over the cited combination of Herrmann and GB'069. Newly added claims 6-8 depend from claim 1 and, thus, are also not rendered obvious by this cited combination of art.

Newly added claims 9-19 include the feature of an expansion space (25) between the rubber cone (13) and the coupling socket (20) when the rubber cone (13) has been fastened into the coupling socket (20).

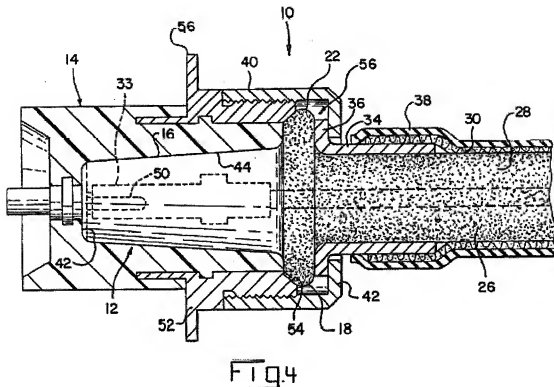
As described above, Hermann describes a connecting device that hermetically seals and compresses the plug through a tightening procedure:

As shown by FIG. 3, subsequent tightening of the collar 40 exerts force on the rearward facing surface 24 of the plug flange 18 through the ferrule flange 36. **This pressure forces the plug nose portion 16 against the receptacle surface 48 under stress, and causes the nose portion to outwardly flex along its taper progressively toward the receptacle forward face 46, and thereby evacuate air from the receptacle bore 44 in that direction.** Further tightening of the collar 40, as illustrated by FIG. 4, initiates contact between the forward surface 20 of the plug flange 18 and the receptacle forward face 46. Still further tightening of the collar 40 compresses the plug flange against the receptacle forward face 46, and causes the outwardly directed surface 22 of the plug flange 18 to progressively contact the flared portion 54 of the conductive bushing 52. Electrical contact is thereby established between the conductive bushing 52 and the cable shielding layer 30 via the conductive coating 28. Throughout the above set forth tightening procedure, it will be appreciated that sealing is achieved sequentially in one direction along the plug member and receptacle member interface. **It will further be appreciated that this sealing is continuous along said interface from the forward end of the plug nose portion to the mutually engaged plug flange 18 and bushing flared portion 54.** Also, during the unmating of the plug and receptacle members, the interfacial seal will be broken unidirectionably in progressive fashion toward the plug nose portion. (Herrmann col. 3, lines 30-58)(emphasis added).

Herrmann provides for "breathing" of the plug by providing a space between the plug and the fastening collar 40:

As shown by FIG. 4 at numeral 56, an unstressed air space between the collar 40 and the compressed plug flange 18 exists subsequent to the mating of the plug and receptacle members. This air space 56 enables the silicone-rubber material of the plug member 12 to adaptively "breathe" during variations in the ambient temperature. (Herrmann col. 3, lines 59-65).

The space 56, which is remote from the boundary between the plug 12 and socket 14, is shown in FIG. 4:

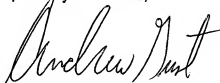


Additionally, claims 10-19 include the feature of a potential well (21) in the coupling socket (20) and connected to at least one high-voltage contact pin (14, 15), with the potential well (21) surrounding the expansion space (25) to prevent spark discharges at the contact pin (14, 15). Applicants respectfully assert that it would not have been obvious to modify the Herrmann connector with a potential well (21) in the coupling socket (20) and connected to at least one high-voltage contact pin (14, 15), with the potential well (21) surrounding the expansion space (25) to prevent spark discharges at

the contact pin (14, 15) based upon the teachings of the metallic spring ring 84 of GB'069. Such a modification would require changing the structure of the receptacle bore 44, where this structure is specifically intended to provide for evacuation of air through the tightening process. Moreover, the only open space in proximity to the Herrmann plug is air space 56 which is remote from the contacting pin 50. Thus, Herrmann would first need to be modified to introduce a space between the plug 12 and receptacle 14 (in contravention to the hermetic sealing and air evacuation objective of Herrmann) and then would further need to be modified with the insertion of a potential well that surrounds the space to prevent spark discharges at the contact pin, as described in claims 10-19. Thus, the combination of Herrmann and GB'069 do not render claims 10-19 obvious.

Accordingly, for the above-described reasons, withdrawal of the rejections is respectfully requested. Favorable consideration and early issuance of the Notice of Allowance are respectfully requested.

Respectfully submitted,



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